

1           --1. (Twice Amended) A process for fabricating a semiconductor device having  
2   a buried layer comprising the steps of:  
3           forming a buried implanted impurity ion region at a location which is  
4   spaced below a surface of a substrate where a buried layer is to be formed in the  
5   substrate;  
6           placing the substrate inside a reactor furnace and, while maintaining the  
7   substrate in the reactor furnace;  
8           providing a non-oxidizing atmosphere inside of the reactor  
9   furnace;  
10           annealing the substrate to activate implanted impurity ions and  
11   diffuse the buried implanted impurity ion region both upwardly and downwardly  
12   from the location below the surface of the substrate while increasing the internal  
13   temperature of the reactor furnace up to a first temperature; and  
14           before the buried ion implanted region beneath the surface of the  
15   substrate expands upwardly sufficiently to reach the surface of the substrate,  
16   changing the internal temperature of the reactor furnace from the first temperature  
17   to a second temperature at which an epitaxial crystal starts to grow on the surface  
18   and introducing an epitaxial growth gas into the reactor furnace to cause an  
19   epitaxial layer to grow on the surface of the substrate, thereby inhibiting  
20   autodoping and formation of crystal defects in the epitaxial layer; and  
21           then removing the substrate from the reactor furnace.--